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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/470,890	12/22/1999	PATRICK D. SMITH	PD05924AM	6738

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EXAMINER

BURD, KEVIN MICHAEL

ART UNIT	PAPER NUMBER
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2631

DATE MAILED: 03/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/470,890

Applicant(s)

SMITH ET AL.

Examiner

Kevin M. Burd

Art Unit

2631

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 November 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5, 7-33, 35, 36, 38 and 39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7-33, 35, 36, 38 and 39 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

1. This office action, in response to the remarks filed 11/4/2004, is a final office action.

Response to Arguments

2. Applicant's arguments filed 11/4/2004 have been fully considered but they are not persuasive. Applicant states "Applicants provide a teaching of how to discover what particular type of signal distortion is present in a composite received signal. The distortion type includes many classes of signal distortion that Jokinen's system simply does not recognize and would not be 'looking for' or 'able to compensate for'." However, the examiner stated in the previous office action the interpretation of the terms impairment and impairment masks since no definition of these terms are found in the claims. As stated in the previous office action, examples of the plurality of impairment masks that are used to determine the interference are whether the interference is direct or reflected (the paths the interfering signal takes, page 11, lines 13-19) and the number of interfering (noise) components present within the received signal (the strength of the interfering signal, page 14, lines 3-9). The system detects a plurality of interferers starting at the strongest interferer (page 14, lines 3-9). Each one of these interferers is a different impairment type. The correlation weights determine if a specific interferer is interfering with the signal. Therefore, numerous impairments are present, detected and multiple detection masks are generated since it is determined if a specific interferer is interfering with the signal. For these reasons and the reasons stated previously, the

rejections to the claims are maintained and stated below. This office action is made final.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-3, 5, 7-18, 29-31, 33, 35 and 38 are rejected under 35 U.S.C. 102(b) as being anticipated by Jokinen (WO 98/18210).

Regarding claims 1, 7-10, 12, 14, 16-18, 29, 35, 38, Jokinen discloses a method for identifying impairments (interferers) in a digitally modulated system (page 1, lines 19-21). Data is recovered from the modulated signal. Pluralities of impairment masks are applied to the data (page 11, lines 13-19). A correlation weight is calculated based on the received data and the weights determine the likelihood that a particular impairment type is affecting the received signal (page 6, lines 8-21). Examples of the plurality of impairment masks that are used to determine the interference are whether the interference is direct or reflected (the paths the interfering signal takes, page 11, lines 13-19) and the number of interfering (noise) components present within the received signal (the strength of the interfering signal, page 14, lines 3-9). The system detects a plurality of interferers starting at the strongest interferer (page 14, lines 3-9).

Each one of these interferers is a different impairment type. The correlation weights determine if a specific interferer is interfering with the signal.

Regarding claims 2 and 30, identification of interfering components of the signal and specific interferers allows improvement in the transmission quality, normalizing the received data recovered in the receiver.

Regarding claims 3, 11 and 31, examples of the plurality of impairment masks that are used to determine the interference are whether the interference is direct or reflected (the paths the interfering signal takes, page 11, lines 13-19) and the number of interfering (noise) components present within the received signal (the strength of the interfering signal, page 14, lines 3-9).

Regarding claims 5 and 33, cancellation of interference in the received signal and interference caused by specific interferers overcomes the occurrences of fading in the channel.

Regarding claim 13, the channel estimations are saved in a memory (page 6, lines 22-28).

Regarding claim 15, the amount of interference in a signal is measured (page 14, lines 3-9).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 4, 32, 36 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jokinen (WO 98/18210) in view of Hewitt (US 6,526,538).

Regarding claims 4, 32, 36 and 39, Jokinen discloses a method for identifying impairments stated above in paragraph 3. Jokinen does not disclose providing a three dimensional presentation of the distribution of the soft decision data over time. Hewitt discloses an encoding scheme with three-dimensional coding schemes or higher (column 6, lines 36-44). To display this data, all three dimensions (x, y and z) must be included (column 4, lines 24-37). Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to utilize three-dimensional encoding of the data streams in the adaptive rate modulator. This would allow more information to be transmitted and then recovered over the communication channel.

5. Claims 19-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jokinen (WO 98/18210).

Regarding claim 19, 21, 22, 24, 26 and 27, Jokinen discloses a method for identifying impairments (interferers) in a digitally modulated system (page 1, lines 19-21). Data is recovered from the modulated signal. Pluralities of impairment masks are applied to the data (page 11, lines 13-19). A correlation weight is calculated based on the received data and the weights determine the likelihood that a particular impairment type is affecting the received signal (page 6, lines 8-21). Examples of the plurality of impairment masks that are used to determine the interference are whether the

interference is direct or reflected (the paths the interfering signal takes, page 11, lines 13-19) and the number of interfering (noise) components present within the received signal (the strength of the interfering signal, page 14, lines 3-9). The system detects a plurality of interferers starting at the strongest interferer (page 14, lines 3-9). Each one of these interferers is a different impairment type. The correlation weights determine if a specific interferer is interfering with the signal. Jokinen does not disclose this system for removing interference occurs in a cable modem system. However, it would have been obvious for one of ordinary skill in the art at the time of the invention to use the method disclosed by Jokinen to detect interferers and remove the affects of this interference in the received signal in any communication system including a cable modem system. This allows each communication system to operate more efficiently and interference free.

Regarding claims 20 and 25, the channel estimations are saved in a memory (page 6, lines 22-28).

Regarding claims 23 and 28, the amount of interference in a signal is measured (page 14, lines 3-9).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M. Burd whose telephone number is (571) 272-3008. The examiner can normally be reached on Monday - Thursday 9 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on (571) 272-3021. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Kevin M. Burd
2/26/2005

KEVIN BURD
PRIMARY EXAMINER